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# EFFECTS OF BEAM CONDITIONING ON WALL EMISSION FROM GAS-FILLED HOHLRAUMS*

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P2 radiation symmetry for indirect drive implosions using the Nova laser is controlled by varying the beam pointing on the hohlraum wall. The measured pointing for optimal symmetry in gas-filled hohlraums is shifted by ~150 μm from the calculated optimal pointing and from empty hohlraums for implosion experiments using 0.35 μm light in a 2.2 ns shaped pulse with a contrast ratio of ~3:1 (PS22).[1] In experiments reported here, measurements of the wall emission indicate that the beam is deflected from the initial pointing position by ~100 μm for $CH_4$-filled hohlraums and ~200 μm for $C_3H_8$-filled hohlraums early in time. After about 1 ns, the shift is reduced and, for $CH_4$-filled hohlraums, the shift is comparable to empty hohlraums. At later times enhanced wall emission is observed near the end of the hohlraum toward the LEH. This also can contribute to the observed pointing shift for implosions. Single beam experiments with an RPP beam indicate that the shift is nearly eliminated for $CH_4$-filled hohlraums and in agreement with calculations. The shift is also much reduced for $C_3H_8$-filled hohlraums. These results can be understood at least qualitatively by filamentation and refraction of the beam due to transverse flow as it traverses the sonic point near the laser entrance hole.[2,3] A Nova beam without beam conditioning is more likely to filament and refract since a significant higher fraction of the beam is at higher intensity than with an RPP and the spatial scales of the hotspots also differ. In addition, the RPP reduces the scattered light from SBS and SRS consistent with the RPP reducing the fraction of the beam at higher intensity. More recent experiments using KPP confirm that the beam shift and spatial emission profile is closer to calculated than for an unsmoothed beams. KPP's are planned for all 10 of Nova's beams to perform implosion experiments.

1. N. Delameter, *et al.*, Phys. Plasmas **3**, 2022 (1996).
2. H. A. Rose, Phys. Plasmas **3**, 1709 (1996).
3. D. E. Hinkel, E. A. Williams, and C. H. Still, submitted to Phys. Rev. Lett.

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